

Method:

First develop a spirit of enthusiasm, a "Santa Claus" spirit in having everything ready before the baby is expected. Select the baby—if possible one with some special interest to class, or some member of the class.

Study layettes, and budgets.

Decide on number of garments, amount to be expected. Make budget.

Discuss materials needed and quality.

Purchase materials (girls).

Cut and make garments.

Emphasize daintiness, simplicity, service.

Use opportunity for as much sex-education as the girls are ready for.

Study and discuss the baby, its care and its rights; also care of the mother.

Bring out the importance of every girl's health and her individual responsibility to coming generations.

Requirements:

An unborn baby; if a needy case the project will have added value. Having necessary materials provided.

"THE CHRISTMAS SPIRIT"

Project—renovation for a second-year clothing class.

Aim:

To give satisfaction from a usually unpleasant task.

To interest the girls in the needs of others.

To gain practice and skill in making over, but more an appreciation of the possibilities.

Method:

Garments (wool) ripped, washed, ironed. Out-of-date and worn garments secured from towns-people for the purpose.

Through conferences with school principals select the most needy girls; estimate their size or measure if possible—ages 6 to 16 years.

In class have each girl select material she wishes to use and plan dress with following points in mind.

Attractiveness

Practicability

Cleansing possibilities

Suitability

Class criticism on finished dresses. Exhibit of dresses adds interest.

Little girls brought in and dressed by class—(dresses given a reward—not because needed). Hands and faces washed, hair combed, dressed, and then taken to mirror.

The true Christmas spirit of giving and receiving developed.

Requirements:

Work planned for completion just before Christmas holidays—the Christmas spirit a big aid in developing interest and enthusiasm. All garments disinfected before handling in class.

NOTE—Beginning classes may add to project by making sateen bloomers—2 pairs for each child.

HEDWIG SCHAEFER

DEVELOPMENTS IN HIGH SCHOOL MATHEMATICS

I AM A fundamentalist rather than a modernist in the teaching of mathematics. Such being the case, what I have to say is based largely on personal experience rather than on modern theory.

High school mathematics has several branches and I have endeavored to touch on all of them lightly, for, of course, no detailed study could be given in the time allotted.

Let us discuss first geometry, which so often proves a bugbear to the average high school pupil. This subject is no longer a mystery, or should not be if led up to in the proper way. In the old days we started with the formal proofs with very little introduction—but not so now. In the present day

we begin with trial and error, intuitional or inventional geometry, call it what you will. The pupil is first introduced to a subject, the like of which he has never seen, by being instructed in the use of the dividers, the protractor, etc. He learns that certain figures are congruent by actual measurement, that angles are equal, not because they are homologous parts of congruent figures, but because he has measured them and found them equal on the evidence of his own eyes. Incidentally, I might suggest that such construction as is learned in this experimental stage should be used later in the course and not dropped immediately afterwards never to be used again.

Ask any teacher who has used this inventional geometry and he will bear witness that the results are worth the time and effort expended. I would go so far as to recommend that at least two weeks, if not more, of the first term be spent in trial and error work so that the new subject will not come as such a shock in the beginning. If a book of inventional geometry can not be added to the numerous books which the high school student is required to have it would be well for the teacher to procure a copy of such a book and make his own course until the time shall come for his class to launch forth on an uncharted sea.

Now, supposing we have set sail, is the teacher to be the captain and crew with the pupils as passengers, or shall the pupils take some part in the handling of the ship? The answer is obvious, but the result is not always what the answer would indicate. Original work takes care of this proposition. As many originals as can possibly be given in the course should be assigned, not difficult ones necessarily, but originals that require some thought and numerical originals in which are applied the numerous formulas that are derived as the work progresses. Of course, in geometry, as in any other high school subject, the effort should always be toward the highest possible degree of pupil activity, the teacher acting as a guide rather

than pursuing the lecture method. The use of a goodly number of comparatively simple originals will be a great aid in reaching this goal.

What has been said applies, of course, to plane geometry, but a good deal of it will apply to solid geometry as well. To the writer's mind, solid is the easier to handle, chiefly because the pupils' minds are maturer, and the subject not so strange. I can't say there is any great difference in the presentation now from what it was some years ago except in one instance. As every one knows, the main trouble in solid geometry is visual; even when the figures are well-drawn, the pupil has great difficulty in visualizing them. The difficulty can be lessened to a great degree by the use of geometrical blocks which are particularly helpful in such propositions as the "Devil's Coffin," the volume of a pyramid equals one-third the base times the altitude, etc. In solid geometry much more emphasis, it seems to me, is placed on the useful formulas with applications of the same, and the numerical exercise is of much value in fixing these formulas in mind.

Algebra in the high school, like geometry, has undergone some changes with the passage of time. Cube root no longer seems to be a necessity, graphs and again more graphs are to be desired, checking of results is more frequent, and we no longer assign problems that serve only to put the teacher on her mettle, as well as give the class the pleasant anticipation of seeing the teacher fail. In regard to graphs, they can be used statistically in algebra as well as in arithmetic and should be, as the graph every day is serving to illustrate facts that language could not state half so clearly. Here is certainly one thing in algebra which will answer the eternal question: "What is the use of my studying this anyway; will it ever be of any use to me?" Of course statistical representation is not the most frequent use for the graph in algebra, but it will well serve the purpose of enlisting the

pupil's sympathetic interest when you begin to illustrate linear equations and to lead him into the graphs of quadratics, etc.

There is no good reason why problems can not be found that will speak in terms of the pupils' consciousness rather than deal with intricate matters which are of no value, nor is it wise to assign problems already mentioned which will prove to be nothing more nor less than puzzles. When I speak of giving suitable problems, I do not mean that in the county school problems about the farm should be assigned, and in the city schools, problems in regard to machinery, but I do mean such problems as the following should be avoided: "A man arrives at a railroad station near his house $1\frac{1}{2}$ hours before the time at which he had ordered his carriage to meet him. He sets out to walk at the rate of 4 miles an hour and meeting his carriage when it had traveled 8 miles, reaches home one hour earlier than he had originally expected. How far is his house from the station, and at what rate did the carriage travel?"

Simplification in the removal of parentheses is another modern tendency. Well do I remember with what horror I used to view, in my algebra lesson of days gone by, a collection of parentheses, vincula, brackets, braces and what-not, with minus signs distributed throughout with reckless abandon; but this condition of affairs is liable to be repeated if we stick too closely to our texts, and we are apt to inflict upon our pupils painful experiences, similar to those we endured in our tender years. This, I believe, is unnecessary. We never again encounter, either in higher mathematics, or in later life—whatever our occupation—such a maze; why burden the pupils with useless labor? In regard to checking results, we all know that this tends to accuracy, and self reliance on the part of the pupil, and puts him in a position on tests and examinations where he will not feel utterly lost and hopeless, without that ever-present help in time of trouble—the answer.

Great emphasis should be laid on formulas and their uses. Again in the formula, the function *idea* can be developed, not function *theory*, but the idea of interdependence or relationship. For instance, in the formula $A=R^2$, if R is doubled what is the effect on A , etc.?

There are a great many other things which might be mentioned in connection with the teaching of algebra, but we can not go into all of them in the time allotted.

Plane trigonometry, as such, is elective in our school, and I suppose in all schools where it is offered. I do not know that there are any new methods to be discussed in connection with it. However, allow me to digress at this point. A good many college men advise against the teaching of trigonometry in the high school, and they have their reasons, but our experience has been as follows: Those of our graduates who take trigonometry in the school have very little difficulty in first-year mathematics at college, while of those who do not take it, the opposite is true. Our advice to the student going to college is, "take trigonometry here"; and this advice is based on experience. Of course, all students should not take trigonometry now, should it be offered, if some other important study has to be omitted, but we firmly believe it is a good thing for the prospective college student.

As the teaching of arithmetic is to be discussed later, I shall not go into that, but would like to suggest offering arithmetic in commercial courses. It is well, if possible, to give a review in arithmetic in the third or fourth year in high school for those who have had no arithmetic since leaving the grades.

General mathematics has come into prominence through use in later years, and is proving to be a good thing for the junior high school pupil. By means of it he learns that arithmetic, algebra, geometry, etc., are all closely related, and that when he leaves arithmetic for algebra, and algebra for ge-

ometry, he is really advancing in the same subject. It is also useful for the student who drops out and does not have the opportunity of studying algebra and geometry as distinct subjects.

In closing, let me offer for your consideration:

(a) Inventional geometry, followed by a course in demonstrative geometry, enriched by the use of many comparatively simple originals.

(b) Algebra simplified to the extent of giving work which will at least be of use in later mathematical studies, if not in later life. Emphasis laid on graphs and the formula with the function idea developed in the latter.

(c) Trigonometry offered in the high school for the prospective college student, and General Mathematics in the junior high school in place of the regular alignment of subjects.

JAMES G. SCOTT

FEDERATED MUSIC CLUBS IN VIRGINIA

IN VIRGINIA there are thirty-two music clubs belonging to the National Federation of Music Clubs, which has headquarters at Peoria, Illinois. The organization sets forth these aims:

1. To make music an integral part of the civic, industrial, educational, and social life of the nation.

2. To encourage and advance American musical creative art, to promote American artists, and to attract foreign artists to become American citizens.

3. Through nation-wide co-operation in accomplishing the first two aims, to make America the musical center of the world.

We see that these aims are very broad, and that their acceptance gives large opportunity for accomplishment by each club.

When request was first made to the president of the Virginia Federation, Mrs. Malcolm Perkins, who is also president of the capital district, for a list of federated clubs

in Virginia, there were only twenty-four. Since then eight more clubs have been added.

To get the desired information I sent a questionnaire to the following clubs:

1. Big Stone Gap Music Club, Big Stone Gap, Va.
2. Monday Afternoon Music Club, Marion, Va.
3. Prince Edward County Music Club, Hampden-Sidney, Va.
4. Buckingham Music Club, New Canton, Va.
5. Arvonja Junior Music Club, Penlan, Va.
6. Fluvanna Junior Music Club, Carysbrook, Va.
7. Chatham Music Study Club, Chatham, Va.
8. Wednesday Music Club of Blackstone, Blackstone, Va.
9. Franklin Music Study Club, Franklin, Va.
10. Music Lover's Club of Luray, Luray, Va.
11. Radford Music Teachers Ass'n, Radford, Va.
12. Radford Music Club, Radford, Va.
13. Fluvanna Music Club, Fluvanna, Va.
14. Junior Music Club, Marion, Va.
15. John Powell Music Club, Abingdon, Va.
16. Thursday Morning Music Club, Roanoke, Va.
17. Albemarle Choral Club, University of Va.
18. Scherzo Music Club, Norfolk, Va.
19. Woman's Choral Club, Newport News, Va.
20. Wednesday Music Club, Petersburg, Va.
21. Bristol Music Club, Bristol, Va.
22. Musician's Club, Fredericksburg, Va.
23. New Musician's Club, Danville, Va.
24. Danville Music Club Study, Randolph-Macon Inst., Danville, Va.

The questionnaires which I sent to these clubs read as follows:

1. What is the name of your club?
2. What year was it organized?
3. How many members were there at organization?
How many at present?
4. What are some activities which show that your club is wide-awake?
5. Is the spirit or enthusiasm large in your town?
Is there any club rivalry?
6. What types of programs do you give?
(Please send copies of programs, if you have any.)
7. How often are meetings held?
8. Where do you meet?
9. Do you have any dues; if so, how much?
Are there other means of financing the club?